

Claims 1-14 and 16-21 stand rejected under 35 USC §102(b) as anticipated by or, in the alternative, under 35 USC §103(a) as obvious over D'Luzansky et al. (US 5,275,860). Applicants traverse and respectfully ask the Examiner to withdraw the rejection for the reasons which follow.

Independent claims 1 and 12 specify a coating disposed on a foam sheet and capable of bonding the foam sheet to a second foam sheet having a different chemical composition than the first sheet at a bond strength of at least about 4 lb<sub>f</sub>/inch. In each claim, the coating is selected from the group consisting of

- ethylene/propylene rubber,
- homogeneous ethylene/alpha-olefin copolymer, and
- ethylene/acrylic acid copolymer.

Such a coating, and the resultant composite structure, is neither taught nor suggested in D'Luzansky. Instead, D'Luzansky discloses a polypropylene foam core 20 bonded to a top skin 21 via an intermediate transition layer 40. The top skin 21 may comprise high density polyethylene in the form of a closed-pore, high-strength, film-like foam (col. 4, lines 49-54). The intermediate transition layer 40

is effectively a mixture of the polymeric material of the foam core and the polymeric material of the top skin. In this example the intermediate layer is a mixture of 65% polypropylene and 35% polyethylene, by weight, the core being polypropylene and the top skin being polyethylene...(col. 5, lines 17-26).

Accordingly, D'Luzansky does not anticipate the claimed invention because it does not disclose a coating comprising ethylene/propylene rubber, homogeneous ethylene/alpha-olefin copolymer, or ethylene/acrylic

acid copolymer as claimed. In this regard, Applicant respectfully notes that ethylene/propylene rubber as claimed is quite different from a mixture of polypropylene and polyethylene as taught in D'Luzansky. In the specification, suitable ethylene/propylene rubbers are defined to include both ethylene/propylene copolymer rubber and ethylene/propylene/diene terpolymer rubber (page 7, lines 21-22). Hawley's Condensed Chemical Dictionary, 12<sup>th</sup> edition, defines ethylene/propylene rubber as "[a]n elastomer made by the stereospecific copolymerization of ethylene and propylene." Hawley's also defines ethylene/propylene terpolymer rubber as "[a]n elastomer based on stereospecific linear terpolymers of ethylene, propylene, and small amounts of a nonconjugated diene, e.g., a cyclic or aliphatic diene.... The unsaturated part of the polymer molecule is pendant from the main chain, which is completely saturated."

Accordingly, while a mixture of polypropylene and polyethylene is a blend of two discrete, pre-polymerized molecules that are not chemically bound to one another, ethylene/propylene rubbers comprise polymer chains in which the ethylene, propylene, and/or diene constituents are copolymerized, and thereby chemically bound, into a single molecule. This may be further understood by reference to the enclosed graphs of Heat Flow vs. Temperature as measured by using Differential Scanning Calorimetry ("DSC"). As indicated, ethylene/propylene rubber has only a single melt point peak at 139.27 °C, demonstrating the presence of a single molecule. In contrast, a blend of low density polyethylene and polypropylene has two distinct melting point peaks, one at 107.81 °C and the other at 156.86 °C, clearly indicating the presence of two separate molecules.

Additionally, Applicant respectfully submits that D'Luzansky does not establish a *prima facie* showing of obviousness against the presently-

claimed invention. It is well established that a *prima facie* case of obviousness may only be made where some motivation or incentive is shown that would have impelled the ordinarily skilled artisan to combine the teachings of the references in such a way as to arrive at the claimed invention. More specifically, the Manual of Patent Examining Procedure provides the following:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine references teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

MPEP §2143 (Seventh Edition, July 1998; Rev. 1, Feb. 2000; pg. 2100-97).

In the instant case, no incentive has been shown that would have motivated one of ordinary skill to substitute ethylene/propylene rubber, homogeneous ethylene/alpha-olefin copolymer, or ethylene/acrylic acid copolymer as claimed for the mixture of polypropylene and polyethylene as taught in D'Luzansky. Accordingly, a *prima facie* showing of obviousness has not been established.

Applicant, therefore, respectfully submits that claims 1-14 and 16-21 are neither anticipated by, nor obvious over, D'Luzansky.

Claims 1-21 stand rejected under 35 USC §102(b) as anticipated by or, in the alternative, under 35 USC §103(a) as obvious over Hurley et

al. (US 5,938,878). Applicant traverses and respectfully ask the Examiner to withdraw the rejection for the reasons which follow.

Hurley discloses foam laminate structures having a core of relatively high density material and one or more layers of relatively low density polymer foam covering the core (col. 1, lines 47-51). The foam layers may include various polymers such as low density polyethylene, ethylene-propylene rubber, etc. (col. 9, lines 20-45). "The lamination can be accomplished using any conventional lamination technique, including heat, film, or adhesive lamination." (Col. 5, lines 47-49.) Heat lamination is described at col. 6, lines 45-67 while film and adhesive lamination is described at col. 6, lines 22-29 and at col. 7, lines 1-13. Suitable materials for film lamination include "polyethylene, polypropylene, a polyester, a nylon, or similar material." (Col. 6, lines 25-27.) Suitable adhesives include "rubber, epoxy, and acrylic adhesives." (Col. 7, lines 7-8.)

However, Hurley does not teach or suggest the presently-claimed invention. Independent claims 1 and 12 specify a coating disposed on a foam sheet and capable of bonding the foam sheet to a second foam sheet having a different chemical composition than the first sheet at a bond strength of at least about 4 lb<sub>f</sub>/inch. In each claim, the coating is selected from the group consisting of

- ethylene/propylene rubber,
- homogeneous ethylene/alpha-olefin copolymer, and
- ethylene/acrylic acid copolymer.

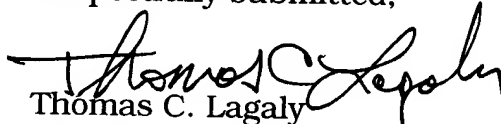
Such a coating, and the resultant composite structure, is neither taught nor suggested in Hurley. Instead, Hurley teaches heat, film, or adhesive lamination, with polyethylene, polypropylene, polyester, and nylon being suitable for film lamination, and rubber, epoxy, and acrylic adhesives being suitable for adhesive lamination. While Hurley teaches

that ethylene/propylene rubber may be used to form the core material, it does not teach the use of a coating of ethylene/propylene rubber disposed on a foam sheet and capable of bonding the foam sheet to a second foam sheet having a different chemical composition than the first sheet at a bond strength of at least about 4 lb<sub>f</sub>/inch as claimed. Further, nothing in the disclosure of Hurley would have suggested the use of such a coating in the composite structure as presently claimed.

Accordingly, Applicant submits that Hurley does not anticipate nor establish a *prima facie* case of obviousness against claims 1-21.

For all of the foregoing reasons, Applicant submit that the claims as now presented are patentably distinct from the references of record and are, therefore, in condition for allowance. A Notice of Allowance is earnestly solicited.

Respectfully submitted,



Thomas C. Lagaly  
Attorney for Applicants  
Registration No. 34,652

P.O. Box 464  
Duncan, SC 29334  
(864) 433-2333

OCT. 9, 2001  
Date

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the claims:**

Claim 1 has been amended as follows:

1. (Amended) A composite structure, comprising:
  - a. a foam sheet comprising polyolefin; and
  - b. a coating disposed on at least one surface of said polyolefin foam sheet, said coating comprising at least one member selected from the group consisting of ethylene/propylene rubber, homogeneous ethylene/alpha-olefin copolymer, and ethylene/acrylic acid copolymer,  
[whereby] wherein, said coating is capable of bonding said polyolefin foam sheet to a second foam sheet having a different chemical composition than said polyolefin foam sheet at a bond strength of at least about 4 lb<sub>f</sub>/inch.